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ABSTRACT

Measures of multidimensional self-concepts (Self Description Questionnaire III), masculinity (M), and femininity (F) (Australian Sex Role Scale) were completed by high school women athletes and nonathletes, and by young adult women athletes and nonathletes. Women athletes in both age groups had substantially higher scores in masculinity and self-concept of physical ability, but did not differ substantially from nonathletes in femininity and in other areas of self-concept. Women athletes in both groups also judged their self-concept of physical ability to be more important to them than did nonathletes, but the two groups did not differ in the perceived importance of other areas of self-concept. These findings support the androgyny contention that MF should not be considered a bipolar construct and suggest that women can be more masculine without being less feminine. The specificity of the relation between athletic involvement and the multiple dimensions of self-concept also provide further support for the construct validity of the self-concept dimensions. (Author/BS)

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Multidimensional Self-concepts, Masculinity and Femininity as a Function of Women's Involvement in Athletics

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Running Head: Women Athletes

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Multidimensional Self-concepts, Masculinity and Femininity as a Function of Women's Involvement in Athletics

ABSTRACT

Measures of multidimensional self-concepts, masculinity (M), and femininity (F) were completed by high school women athletes and nonathletes, and by young adult women athletes and nonathletes. Women athletes in both age groups had substantially higher scores in masculinity and self-concept of Physical Ability, but did not differ substantially from nonathletes in femininity and in other areas of self-concept. Women athletes in both groups also judged their self-concept of Physical Ability to be more important to them did nonathletes, but the two groups did not differ in the perceived importance of other areas of self-concept. These findings support the androgyny contention that MF should not be considered a bipolar construct and suggest that women can be more masculine without being less feminine. The specificity of the relation between athletic involvement and the multiple dimensions of self-concept also provide further support for the construct validity of the self-concept dimensions.

Multidimensional Self-concepts, Masculinity and Femininity as a Function of Women's Involvement in Athletics

The present study seeks to examine the perhaps incongruous roles of being a woman and being an athlete. Traditionally, athletic participation has been the prerogative of the male. The behavioral and psychological demands of competitive sport reinforces what is stereotypically masculine and has been the antithesis of what is stereotypically feminine. Psychological characteristics needed to be a successful athlete -- competitiveness, drive, determination, aggressiveness, tough-mindedness -- are typically labelled as masculine. Consequently, it is possible that the female athlete places her femininity in jeopardy and risks being labelled as masculine if she makes a serious commitment to sport (Harris, 1979).

The purposes of this study are to relate women's involvement in athletics to multiple dimensions of self-concept, masculinity and femininity, and to relate the findings to theoretical issues in the study of these constructs. This was accomplished by comparing measures of these constructs for women athletes with those for nonathletes. Since both the implications of a woman's involvement in sport and the psychological constructs that are examined may be age-related, separate comparisons were made for groups of high school women and for groups of young adult women.

Multidimensional Self-concepts.

Self-concept is widely posited to be a desirable outcome, and to explain overt behaviors and other constructs, in many areas of psychological research. Despite the theoretical and practical significance of the construct, reviews of self-concept research typically identify a lack of theoretical models for defining and interpreting the construct, and the poor quality of measurement instruments used to assess it (Burns, 1979; Welles & Marwell, 1976; Wylie, 1974; 1979). In an attempt to remedy this situation, Shavelson, Hubner and Stanton (1976) reviewed empirical and theoretical research, and posited a multifaceted, hierarchical model of self-concept derived from their review. Shavelson proposed a general self-concept defined by academic and nonacademic self-concepts; academic self-concept was divided into self-concepts in particular content areas (e.g., English and mathematics); nonacademic self-concept was divided into social, physical and emotional self-concepts. Physical self-concept was further divided into self-concepts of physical ability and physical appearance, while social self-concept was divided into relations with peers and relations with significant others. This model was the basis of the self-concept instrument used in this study, and for predictions of the pattern of correlations

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between athletic involvement and different areas of self-concept.

At the time Shavelson first developed his model the multidimensionality of self-concept was not broadly accepted. Through the early 1970's self-concept instruments typically consisted of a hodge-podge of self-referent items that were not designed to measure specific components, and theoretically defensible dimensions of self-concept could not be readily identified from responses to these instruments (c.f., Marsh & Smith, 1982). More recently researchers have developed instruments to measure particular facets that are at least loosely based on an explicit theoretical model, and then used factor analytic techniques to test for these a priori facets. This approach has produced instruments in which multiple facets of self-concept are clearly identified (e.g., Boersma & Chapman, 1979; Dusek & Flaherty, 1981; Fleming & Courtney, 1984; Harter, 1982; Marsh, Barnes, Cairns & Tidman, 1984; Marsh, Barnes & Hocevar, in press; Soares & Soares, 1982) and provide strong support for the multidimensionality of self-concept. Shavelson and Marsh (in press) reviewed research stimulated by the Shavelson model; they also found strong support for the multidimensionality of self-concept and concluded that the construct cannot be adequately understood if its multidimensionality is ignored. Perhaps the strongest support for the multidimensionality of self-concept, and particularly for the Shavelson model, comes from research based on the Self Description Questionnaire (SDQ) instruments that is summarized in their review. One of these, the SDQ .II, is used in this study.

Marsh (in press; Marsh, Barnes, Cairns & Tidman, 1984; Marsh, Parker & Barnes, in press) examined sex and age effects in multiple dimensions of self-concept as measured by SDQ instruments and as reported by other researchers. While a systematic presentation of this research is beyond the scope of the present investigation, consistent sex and age effects were found and are relevant to the present investigation. Age effects in most areas of self-concept were nonlinear: self-concepts were very high for the youngest children; they dropped steadily between the ages of 7 and 13, and this decline ended at about age 14; self-concepts then appeared to increase between the ages of 14 and 17. Sex effects appeared at all age levels and were generally consistent with sex stereotypes; girls, compared to boys, tended to have lower self-concepts in math and physical areas, and to have higher self-concepts in reading and perhaps in social areas. Hence, self-concepts in the present investigation are likely to be age-related and differences between women athletes and nonathletes may bear some relation to the pattern of stereotypic sex differences observed in multiple dimensions of self-concept.

Shavelson and Marsh (in press) also examined support for the construct

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validity of self-concept responses in the pattern of relations between multiple dimensions of self-concept and other constructs such as academic achievement and the perceptions of others. External criteria tended to be substantially correlated to the specific facet of self-concept to which it was most logically related, and less correlated to other areas of self-concept. For example, Marsh, Relich and Smith (1983) found that reading achievement was substantially correlated with Reading self-concept, less correlated with self-concepts in other academic areas, and uncorrelated with self-concepts in nonacademic areas. This pattern of result provides support for both the convergent and discriminant validity of the multiple dimensions of self-concept. Much of this research emphasized academic constructs, and so an important purpose of this study is to examine the relations between multiple dimensions of self-concept and a nonacademic variable -- involvement in athletics. Support for the construct validity of the self-concept responses requires athletic involvement to be substantially correlated with self-concept of Physical Ability and substantially less related to other dimensions of self-concept. Based on the Shavelson hierarchy is it also hypothesized that athletic involvement will be postively related to the self-concept of Physical Appearance and, perhaps, to General self-concept. Finally, based on previous SDQ research, it is expected that self-concepts of young adults will be higher than those of high school students.

Masculinity, Femininity and Androgyny.

Prior to the 1970's personality researchers typically hypothesized masculinity (M) and femininity (F) to be the end-points of a bipolar unidimensional construct. At that time there was no serious challenge to the bipolarity assumption and in her classic 1973 review of MF research Constantinople stated that "no measure of M-F has been devised that does not incorporate bipolarity from the start" (p. 392, 1973). The implication of this assumption is that to be more feminine (masculine) a person must necessarily be less masculine (feminine). In the mid-1970's Constantinople (1973), Bem (1974), Heilbrun (1976), Spence, Helmreich and Stapp (1975), and other androgyny researchers challenged this assumption. The key assumptions of Bem's 1974 theoretical description of androgyny are that M and F are independent dimensions, and that individuals high on both -- androgynes -- are mentally healthier and socially more effective.

While androgyny researchers agree that M and F reflect two distinguishable traits and not a bipolar construct, they disagree on how androgyny should be defined and measured. Inadequate and inconsistent operational definitions of androgyny have hampered research on the relations between MF measures and other constructs (see Pedhazur & Tetenbaum, 1979,

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pp. 1013-1014 for further discussion). If M and F are relatively independent constructs, then it is dubious to collapse M and F onto a single "androgyny" continuum and considerable variance may be lost when such a definition is used. In recognition of problems inherent in defining androgyny along a single continuum, Bem (e.g., Bem, 1977) developed the median split procedure that is consistent with her hypothesis of separate M and F dimensions. However, considerable variance is still lost through this gross categorization of M and F scores, and M and F are completely confounded in comparisons of high-M/high-F (androgynous) individuals with low-M/low-F (undifferentiated) individuals. More recently Bem (1977) and others (e.g., Marsh & Myers, 1984; Marsh & Smith, 1984; Pedhazur & Tetenbaum, 1979) have advocated the use of multivariate techniques in which M and F are examined as separate predictors of other constructs.

The most widely used instruments to infer androgyny are the BSRI and the PAQ. While their empirical bases and theoretical rationales differ somewhat, the two instruments apparently measure similar constructs; both make inferences about M and F on the basis of socially desirable characteristics, both result in distinguishable M and F scales, and PAQ scores are highly correlated with BSRI scores (Lamke, 1982; Lubinski, Tellegen & Butcher, 1983). However, the reliance only on socially desirable attributes may constitute an important weakness and produce a systematic response bias (Baumrind, 1982; Kelly, Caudill & Hathorn, 1977; Kelly & Worrell, 1977; Marsh & Myers, 1984; Marsh & Smith, 1984; Pedhauzer and Tetenbaum, 1979). Spence, Helmreich & Holahan (1979), basing their arguments on intuitive and theoretical perspectives, also contend that many M and F characteristics are socially undesirable, but may still have important consequences. In response to this potential weakness, Spence, Helmreich and Holahan (1979) expanded the original PAQ to include M and F scales defined by socially undesirable characteristics, and Antill, Cunningham, Russell and Thompson (1981) developed the Australian Sex-Role Scale (ASRS) to specifically measure M and F with positively valued characteristics (M+ & F+) and with negatively valued characteristics (M- & F-). Using confirmatory factor analyses of responses to the ASRS, Marsh and Myers (1984) found that it was not justifiable to collapse the M+, F+, M-, and F- scores into two dimensions, though a four-factor solution did provide a reasonable fit to the data. The ASRS is used in the present investigation.

The androgyny assumption that an individual can be high on both M and F is an important focus of the present investigation. Women athletes are expected to be more masculine than women nonathletes, but a critical issue is whether or not they differ in femininity. A traditional perspective that

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posits M and F to be the ends of a bipolar dimension suggests that women athletes would be less feminine than nonathletes, while androgyny theory suggests that the femininity of the two groups may not differ.

The Woman Athlete.

Starting at an early age females participate in athletics in smaller numbers, with less intensity, and for a shorter time span than do males (Hall, 1978). This finding may be explicable in terms of different socialization patterns. Positive role models, and supportive family and peers, are important to the sport role socialization of young females (Synder, Kivlin & Spreitzer, 1979). The behavioral and psychological demands of sport are commersuate with sterotypic masculinity, but not with stereotypic femininity. Hence, the woman athlete is not only expected to be more masculine than women nonathletes, but she may place her femininty in jeopardy and run the risk of being labelled as lacking femininity by others. To the extent that the female role and the athletic role are incompatible, the woman athlete may experience role conflict (Sage & Loudermilk, 1979). Sanctions are imposed on those who violate sex role prescriptions that define masculinity and femininity into a bipolar construct (Snyder, Kivlin & Spreitzer, 1979). Harris (1973) suggests that women athletes must either be secure in their femininity or else reject their femininity in order to participate in sports without being threatened.

A number of studies have examined the relation between female involvement in athletics and MF, and/or self-concept, but problems in the definition and measurement of these constructs complicate their interpretation. Self-concept studies typically find female athletic involvement has either little relation to, or a small positive relation to, overall self-concept (Ibrahim & Morrison, 1976; Snyder & Kivlin, 1975; Trujillo, 1983; Vincent, 1976; Young, 1981), though it is likely that some specific areas of self-concept will be substantially related to athletic involvement while others will not. While some researchers (e.g., Ho & Walker, 1982; Synder & Spreitzer, 1976) have found women athletes to have higher self-concepts than women nonathletes in areas such as athletic ability and body image, two other studies (Ibrahim & Morrison, 1976; Young, 1981) found little or no difference on the Physical Self scale of the Tennessee Self-concept scale.

MF studies typically find that female athletes are more androgynous, more M, less sex-typed, or less F than female nonathletes (e.g., Colker & Widom, 1980; Del Ray & Sheppard, 1981; Harris & Jennings, 1976 (as cited by Colker & Widom, 1980) Helmreich & Spence, 1977; Myers & Lips, 1978; Uguccioni & Ballantyne, 1980). While the particular pattern of results varied from study to study, none of these studies based on standardized

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instruments found female athletes to be more F than, or even as F as, female nonathletes. Two other studies (Ho & Walker, 1982; Nicholson, 1979) based on single-item scales of F reported that F was not correlated with female athletic involvement, though neither of these studies included a corresponding measure of masculinity. Other researchers suggest that the social costs to a woman athlete are declining due to the broadening definitions of sex role behaviors (Anthrop & Allison, 1983; Basow & Spinner, 1984; Synder, Kivlin & Spreitzer, 1979) and this may affect the self-perceived M and F of women athletes in the future.

Based on this research it is expected that female athletes, compared to female nonathletes, will be more masculine though perhaps less feminine, and will have higher self-concepts of physical ability, physical appearance, and perhaps overall self-concept. Nevertheless, it must be emphasized that none of these relations, not even the positive correlation between female athletic involvement and masculinity (e.g., Colker & Widom, 1980), has been found consistently in the studies reviewed here.

Method.

Sample and Procedures.

High School Women. The sample of high school women, both the athletes (n=46) and nonathletes (n=46), came from a large, independent girls' high school in Sydney Australia. The participants were students in grades 10 to 12, and varied in age between 15 and 19 years (mean = 16.7). Students from this school tend to come from middle-to-upper social classes and to be above average in academic ability. The athletes were selected from all the major sports at that school -- track and field, swimming, tennis, netball, field hockey, softball, and gymnastics. To qualify as an athlete for the purposes of this study, a girl had to represent their school in a first-grade team and had to train for a minimum of four hours per week for at least six months of the year. The nonathlete group consisted of a random sample of girls from grades 10 to 12 who did not train or compete regularly in any sport. Respondents, both athletes and nonathletes, completed the self-report measures during regular school hours. The survey, including some materials not considered in the present analysis, took approximately 30 minutes to complete.

Young Adult Sample of Women Athletes. Women athletes in this group (n=30) were all participants in the 1984 Australian National Powerlifting Championships and varied in age between 17 and 41 (mean = 26.2). Powerlifting is a relatively new sport, particularly for women, and differs from weightlifting in that different types of lifts are used that rely more on pure strength and power. The self-report measures, together with a stamped, addressed envelope, were given to all competitors. This group was

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selected partially because of convenience since one of the authors was a participant in this championship, and this may account for the high response rate of 88%. However, this group is also particularly appropriate for the purposes of the present investigation in that powerlifting is one of the most stereotypically masculine of all sports.

Young Adult Sample of Women Nonathletes. The lack of a suitable group of nonathletes for the young adult woman sample caused a dilemma. In preliminary analyses based on just the three groups (Jackson, 1984), the young adult athletes differed from the other groups in a way that appeared to be due to age alone. In order to test this possibility, nonathlete comparison groups were derived from responses by subjects from previously published studies. For purposes of the Australian Sex Role Scales (ASRS; see description below), data came from the 735 female responses that comprise the published norms for the instrument (Russell & Antill, 1984). They were primarily post-secondary students and had a mean age of 25.1 years. For purposes of the SDQ III, data came from the 76 responses by female university students described elsewhere (see Marsh, Barnes and Hocevar, in press; Marsh & O'Niell, study 2, 1984) who varied in age from 17 to 46 (mean = 22.4). The administration of the instruments to these groups is described in the published studies, and the manner in which data from these groups was analyzed is described below.

The use of responses from other research as a comparison group for the young adult sample of women athletes has several limitations: the groups are likely to differ on characteristics besides athletic involvement, the sample sizes vary drastically, only the means and standard deviations are available for the ASRS, and responses from the three groups that are unique to this study must be compared to responses from different samples for the ASRS and for the SDQ III. The first limitation, the noncomparability of groups, is perhaps the most serious, but this would also be a likely problem in any other comparison group in this nonexperimental design; it is unlikely that any comparison group would be equivalent to the group of champion powerlifters on all variables besides athletic involvement. Furthermore, the compromise is much better than having no comparison group, and the implications of these limitations can be examined in the statistical analysis of the results. In particular, if the athlete/nonathlete differences are consistent in the high school sample and the young adult sample, as is predicted, then threats to the validity of the conclusions will be less serious.

Instruments.

ASRS. As part of the study, all students completed form A of the ASRS (Antill, et al., 1981). The ASRS consists of 50 personality-like

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characteristics (e.g., logical, anxious, loves children) and subjects respond to each item according to how true it is as a self-description on a "1-Never or almost never true" to "7-Always or almost always true" scale. The items are classified as M (20 items), F (20 items), or neutral (10 items) with half the items within each group being positively valued (i.e., socially desirable) and half negatively valued. For purposes of the present investigation only the 40 MF items from the ASRS are considered. The four ASRS scores, M+, M-, F+, F-, each represent the unweighted sum of responses to ten items, while the Mtot and Ftot scores represent the sum of the two M scales and the two F scales respectively.

SDQ III. The SDQ III is one of a series of self-concept instruments designed to measure self-concepts of primary school students (SDQ), high school students (SDQ II), and university students (SDQ III). The SDQ instruments are based upon the Shavelson model of self-concept (Shavelson, et al., 1976; Shavelson & Marsh, in press) and the multiple dimensions of self-concept proposed in that model. Numerous exploratory and confirmatory factor analyses of responses to the SDQ instruments have identified the factors that each is designed to measure (e.g., Marsh & O'Niell, 1984; Marsh, Parker & Barnes, in press; Marsh, Relich & Smith, 1983; Marsh, Richards & Barnes, in press; Marsh, Smith & Barnes, 1983; Marsh, Smith & Barnes, in press; Shavelson & Marsh, in press). Other research with the SDQ instruments has shown that: a) the reliability of each factor is generally in the 0.80's and 0.90's while correlations among the factors are modest (median r's generally 0.20 or less); b) the self-concept factors are substantially correlated with self-concepts in matching areas as inferred by teachers and significant others (Marsh, Barnes & Hocevar, in press; Marsh & O'Niell, 1984; Marsh, Smith & Barnes, 1983; in press; Marsh, Smith, Barnes & Butler, 1983); and c) the self-concepts in academic areas are substantially correlated with academic achievement indicators while nonacademic self-concepts are not (Marsh, 1984d; Marsh, Parker & Barnes, in press; Marsh & O'Niell, 1984; Marsh, Parker & Smith, 1983; Marsh, Smith, Barnes & Butler, 1983). These findings support the validity of interpretations based upon the SDQ instruments.

The SDQ III is designed to measure 13 areas of self-concept (see Marsh, Barnes & Hocevar, in press; Marsh & O'Niell, 1984 for a more complete description and the wording of the items). Students respond to statements, approximately half of which are negatively worded, on a "1-Definitely False" to "8-Definitely True" response scale. Though not formally part of the SDQ III, most studies have also asked subjects to respond to 12 summary description items designed to reflect 12 of the 13 SDQ III scales -- all but the General Self scale. For each of these 12 items subjects indicate the

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item's accuracy (i.e., how accurate is this statement as a description of you) and its importance (i.e., how important is this characteristic in determining how you feel about yourself). Psychometric properties of the accuracy ratings and their relation to the corresponding multi-item scale scores that they are designed to reflect were examined by Marsh, Barnes and Hocevar (in press). Correlations between each accuracy rating and the corresponding multi-item scale score varied from .54 to .90 (mean = .69), suggesting that the accuracy ratings provide an reasonable "abbreviated" form of the SDQ III. For purposes of the present investigation, four of the 13 SDQ III scales (Physical Ability, Physical Appearance, Emotional Stability, and General Self) and all 12 summary descriptions were used (see Tables 2 and 3 in the Results section for a listing of the 13 areas of self-concept measured by the SDQ III).

Statistical Analyses.

All statistical analyses in this study were conducted with the commercially available SPSS program (Hull & Nie, 1981; Nie, Hull, Jenkins, Steinbrenner & Bent, 1975). Preliminary analyses were conducted to examine psychometric properties of responses to both instruments for the three groups of subjects that are unique to the present investigation -- all but the young adult sample of women nonathletes (see Jackson, 1984, for more detail). Coefficient alpha estimates of reliability varied from .90 to .95 for the four self-concept scales. For scores representing the ASRS the coefficient alphas were as follows: M+ (.72), M- (.79), Mtot (.81), F+(.75), F- (.80) and Ftot (.77). These estimates are similar to other published reports for each of these instruments, and similar to values based upon responses from the young adult sample of women nonathletes that were derived from previously published studies.

For purposes of the present investigation, cases in the young adult sample of women nonathletes were weighted so that the weighted number of cases was 30 (see Nie, et al., 1975, pp. 129-131 for further detail) -- the same as in the young adult sample of women athletes. This was done so that the effective sample sizes of different groups were proportionate. particularly for ASRS responses, and also to create a balanced design that facilitates the interpretation of statistical effects. This weighting procedure had no effect on the means and standard deviations for the groups, but it substantially reduced the effective sample size for the samples of young adult nonathletes and the degrees of freedom that were used in determining statistical significance. Thus, in terms of statistical significance testing, the procedure is conservative. The advantages for the use of this procedure are similar to those for randomly sampling a subset of

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the cases in order to create a balanced design of equal or proportionate sample sizes. However, that procedure would also lose much information by eliminating cases and it was not be possible for responses to the ASRS where raw data from the Russell and Antill study were not available to the researchers (see footnote 1).

Statistical analyses were conducted as a series of 2 (athlete vs. nonathlete) by 2 (high school students vs. young adult) ANOVAs; differences between the four groups were used to construct three orthogonal contrasts representing the main effect of athletic involvement, the main effect of age, and their interaction. For responses to the SDQ III, separate MANOVAs were conducted for: (a) the set of four scale scores, (b) the set of 12 accuracy ratings, and (c) the set of 12 importance ratings. In addition to the multivariate F-ratios that test the two main effects and the interaction effect across all variables in each set, univariate F-ratios and standardized discriminant function coefficients were computed to reflect the contribution of each variable in the set to the overall effect. Since each of the three effects is based on only one degree of freedom the univariate F-ratios contain essentially the same information as would canonical variate correlations, and so these coefficients are not considered. (For further descriptions of the various indicators of each variable's contribution to the overall effect in MANOVA see Bray & Maxwell, 1982). Responses by individual subjects to the ASRS were not available for the young adult sample of women nonathletes, data from the Russell and Antill (1984) study, and so MANOVAS could not be conducted. However, since means and standard deviations for these responses were reported by Russell and Antill, it was possible to conduct univariate analyses similar to those conducted for responses to the SDQ III (see footnote 1).

Results and Discussion

Masculinity and Femininity.

M and F scores for the different groups, and the statistical analyses of the group differences, are summarized in Table 1. Women athletes are substantially more masculine than women nonathletes (eta = r = .30; see footnote 2) , while the two groups do not differ in terms of femininity. The statistically insignificant interaction effects demonstrate that these conclusions are consistent for both the young adult and high school samples. Also, none of the MF scores is significantly related to age. Women athletes are significantly more masculine than nonathletes in terms of both socially desirable and socially undesirable components of masculinity, however the differences are very large for the socially desirable characteristics (eta = r = .34) and much smaller for the undesirable characteristics (eta = r = .16).

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The athletic groups do not differ from the nonathletic groups in terms of either the socially desirable or undesirable characteristics of femininity.

Insert Table 1 About Here

These results are quite important to androgyny theory in that women athletes are substantially more masculine than nonathletic women without differing in terms of their femininity. The findings are inconsistent with the older, bipolar conceptualization of the MF construct, and also provide convincing evidence against the apparent misconception that women athletes are less feminine. The particular pattern of findings also provides evidence against various counter-explanations that could result from the perhaps dubious design of the study. In particular the mean responses by the young adult sample of nonathletes, data from the Russell and Antill study, are very similar to the high school sample of nonathletes. Furthermore, the athlete/nonathlete differences are very similar for the young adult and high school samples.

It is somewhat surprising, perhaps, that the two athlete groups do not differ more in their self-perceived masculinity. The groups differ not only in terms of age, but also in terms of the particular sport in which they participate. The high school women athletes, compared to the sample of nationally ranked powerlifters, participated in sports generally perceived to be more socially acceptable for women, spent less time training, and had achieved less athletic recognition (Jackson, 1984). The small sample of high school athletes precluded the comparison of M and F scores for women participating in different sports. Nevertheless, these findings tentatively suggest that the level of masculinity may depend on whether or not a woman is involved in sport rather than the nature of the sport. However, further research is needed to test this tentative suggestion.

Multiple Dimensions of Self-concept.

Multi-item Self-concept Scales. Self-concept scales representing Physical Ability, Physical Appearance, Emotional Stability, and General Self, and the statistical analyses of the group differences for these scores, are summarized in Table 2. Across the four measures the effects of athletic involvement and age are both statistically significant, but their interaction is not. The effect of athletic involvement is explained primarily in terms of the huge difference (eta = r = .70) between athletes and nonathletes in their self-concepts of Physical Ability. The athletes also have a significantly higher level of overall self-concept as reflected in the General Self scale, but the size of this difference is much smaller (eta = r= .18). Athletes and nonathletes do not differ significantly in terms of either self-concepts of Physical Appearance or Emotional Stability (see footnote 3).

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Insert Table 2 About Here

As predicted on the basis of projections from other research with younger subjects, age is positively correlated with self-concept during late adolescence and young adulthood. Hence these findings provide new evidence that suggests that the apparent increase in self-concepts observed during late high school years continues into early adulthood. Nevertheless, the gross classification of age and the nature of the sample dictates that this finding should be interpreted cautiously and should be replicated with a research design more appropriate to the study of age effects in both males and females.

Single-item Summary Descriptions -- the Accuracy Ratings. In addition to the muti-item self-concept scales, each respondent completed the abbreviated summary descriptions that represent a wider range of self-concepts (see Table 3). Across all 12 areas of self-concept athletes had higher self-concepts than nonathletes, but once again this difference was primarily due to the huge (eta = r = .63) difference in self-concept of Physical Ability. Athletes also had significantly higher self-concepts in Math, Opposite Sex Relations and Emotional Stability. (While Emotional Stability was significant here and not in analyses summarized in Table 2, the size of the effects in each analysis -- etas = .09 vs. .17 -- were both small and did not differ substantially from each other.)

Insert Table 3 About Here

The significant age effect based on the summary descriptions, particularly the large effect for Physical Appearance, is also generally consistent with the effects observed in Table 2. However, of the nine additional areas of self-concept considered in Table 3, only Opposite Sex Relations is significantly related to age. This suggests that the age effects may be more specific to particular areas of self-concept than was anticipated. Also, the nature of the differences, particularly the large effect for self-concept of Physical Appearance, may not generalize to a sample of males. Consequently, while these findings are heuristic, they need to be examined in further research.

Single-item Summary Descriptions -- the Importance Ratings. Responding to the same summary descriptions of the 12 areas of self-concept, respondents also indicated the importance of each area to how they felt about themselves (see Table 4). Across all 12 areas only the multivariate effect of athletic involvement was statistically significant, and Physical Ability was the only area athletes judged to be more important than did nonathletes. These findings, perhaps more clearly than any of the other analyses of the SDQ III responses, demonstrate the specificity of the effect of athletic involvement to self-concept of Physical Ability.

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Insert Table 4 About Here

Summary of Self-concept Analyses. A complicated set of analyses comparing self-concepts of women athletes and nonathletes can be easily summarized. Women athletes have much higher self-concepts of Physical Ability -- and perceive self-concepts in this area to be more important -- than do nonathletes, but the two groups do not differ substantially in other areas of self-concept. Furthermore, this pattern of differences is consistent across comparisons for high school students and young adults. However, there were other statistically significant differences between athletes and nonathletes, albeit much smaller differences, that deserve further consideration. First of all, the direction of each of these effects, and even nonsignificant effects that approached statistical significance, indicated that women athletes have higher self-concepts than do nonathletes. Second, most of these effects (i.e., Physical Ability, Physical Appearance, General Self, Math, Emotional Stability) are areas where women typically have lower levels of self-concept than do men and/or where self-concepts are apparently more strongly correlated to masculinity than to femininity (see Marsh & Smith, 1984, for further discussion on the relation between multiple dimensions of self-concept and MF scores). In this respect, the results for the multiple dimensions of self-concept compliment those for the MF scores.

The comparison of scores for criterion groups known to differ on a variable of interest is a recommended procedure for validating measures of a psychological construct. Hence, the specificity of the athlete/nonathlete differences provides strong support for the construct validity of self-concept. While the positive correlation between athletic involvement and self-concept of Physical Ability is hardly surprising, the size of the relation and its specificity were unexpected. Athletic involvement correlated .70 with self-concept of physical ability while correlations with other areas of self-concept were typically nonsignificant and none exceeded .2. Taken together, these findings provide additional support for the convergent and divergent validity of responses to the multiple dimensions of self-concept.

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Summary and Implications

The results of the present investigation have important implications for the study of MF and self-concept, and also for study of women athletes. Consistent with androgyny theory, but in contradiction to a bipolar conceptualization of MF, women athletes were more masculine than nonathletes but did not differ in terms of femininity. In support of the construct validity of responses to multiple dimensions of self-concept, athletic

involvement was substantially related to self-concept of Physical Ability but not to other areas of self-concept. Taken together these findings show that women athletes are no less feminine than nonathletes and do not have lower self-concepts in any of the areas measured by the SDQ III. Apparent misconceptions that women athletes are less feminine or have poorer self-concepts in nonathletic related area are thus refuted.

In addition to the self-concept of Physical ability, women athletes in both age groups, compared to nonathletes, had somewhat higher self-concepts on the General Self scale and several other areas of self-concept where women typically score lower than men. In fact, the second largest effect of athletic involvement -- after that of Physical Ability -- was for Math self-concept, and this sex difference in self-concept is often postulated to be the result of the cultural influence of sex stereotypes. The correlational nature of the data mean that causal intepretations must be advanced tentatively. Nevertheless, these findings suggest the possibility that women's involvement in athletics may have a positive effect on self-concept in a number of areas, and particularly in areas that are most related to sex stereotypes.

Previous research on the relation between women's involvement in sport and MF measures have not produced a consistent set of findings, due in part to methodological ambiguities in the definition and measurement of the construct. However, no other study known to the authors has found athletic involvement for women to be positively correlated to masculinity and unrelated to femininity on a standardized MF instrument. Since this result was consistent for both age groups in the present investigation, the generalitiy of the finding is strengthened and many counter-inpretations based on the design of the study are unlikely. The present investigation differs from most in that both positive and negative aspects of M and F were examined, while most other research has considered only postive aspects. However, the findings here were consistent across both positive and negative scales, and in fact were much stronger for the positive scales than for the negative scales. Other differences in the present study include the instrument used to measure M and F, and the country in which the study was conducted. The most optimistic explantion for the findings is, as suggested by other authors, that the social cost of being a woman athlete, to whatever extent this may have been an issue in the past, is declining due to broadening definitions of sex role stereotypes.

The women powerlifters and the high school athletes were similar to each other in terms of M, F, and the multiple dimensions of self-concept despite the fact that the powerlifters competed in a more masculine sport, were more involved in their sport and had achieved higher levels of athletic

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accomplishment. The lack of difference in the psychological constructs may be explicable in terms of the frame of reference model posited by Marsh and Parker (1984; also see Marsh, 1984a; 1984b). According to this model individuals compare their self-perceived abilities with those of others in their relevant peer group, and use this relativistic comparison as one basis for evaluating their self-concept. Marsh and Parker demonstrated that the mean academic self-concept in schools where academic abilities were poor was similar to that in schools where academic abilities were good, and related the findings to being a big fish in a small pond. It may be that the powerlifters evaluate their athletic skills relative to a different frame of reference group than do high school athletes, and that this explains why their self-concepts of Physical Ability are no higher than those of high school athletes. Hence, these findings may provide additional support for the frame of reference model.

It was predicted that athletic involvement would be significantly correlated with self-concept of Physical Appearance, but there was no support for this prediction. In retrospect, this prediction was perhaps too simplistic. If the Physical Appearance scale had focused on body fitness, body development, or even body image, then the prediction may have been supported. However, self-perceived physical attractiveness -- particularly for women -- may not be related to athletic prowess and self-concepts of Physical Ability. The prediction was based on the hierarchy proposed in the Shavelson model. However, recent tests of the hierarchical structure of responses to the SDQ III, while generally supporting the Shavelson model, suggest that self-concepts of Physical Ability and Physical Attractiveness may not combine to form a second-order physical factor (Marsh, 1984c). This distinction may also explain why some researchers (e.g., Ibrahim & Morrison, 1976; Young, 1981) found little or no relation between female athletic involvement and the Physical Self scale of the Tennessee Self-Concept Scale that incorporates self-perceptions of body, health, appearance, skills, and sexuality into a single scale. Hence, these results may provide further support against incorporating Physical Ability and Physical Appearance into a single physical-self scale.

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Footnotes

1 -- In comparisons based on SDQ III responses each case in the young adult sample of nonathletes was assigned a weight of 30/76 where 76 was the number of cases in this group and 30 was the number of cases in the young adult sample of athletes; cases in all other groups were assigned a weight of one. For the univariate ANOVAs conducted on responses to the ASRS the sums of squares terms were determined from the means and standard deviations of the four groups. For purposes of these analyses, the sample size of the young adult sample of nonathletes was taken to be 30 and is equivalent to assigning a weight of 30/735 to each of the 735 cases.

2 -- Eta, the square root of the ratio of the SSeffect over the SStotal, is equal to the correlation between an independent and dependent variable in each of the univariate ANOVAs summarized in Tables 1 - 4 since each of the effects is based on a single degree of freedom and the design is balanced. In each analysis $eta = [(Fa) / ((Fa + Fb + Faxb + 148))]^{1/2}$ where: Fa is the F-ratio for the main-effect of the variable being considered, Fb and Faxb are the F-ratios for the other main effect and the interaction term, and 148 is the degrees of freedom for the error term.

3 -- The standardized discriminant function coefficients suggest that athletes have poorer self-concepts in these last two areas than do nonathletes, but the nature of these coefficients which resemble standardized beta weights in multiple regression make this interpretation somewhat problematic. The self-concepts of athletes in these areas are somewhat poorer after "correcting for" their extremely high self-concepts in Physical Ability. In fact, based on the "uncorrected" scores both athlete groups have higher self-concepts in these two areas than do the nonathletes though these differences are not statistically significant. For further discussion of the interpretation of standardized discriminant function coefficients see Bray & Maxwell (1982).

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Table 1

Masculinity and Femininity in Women as a Function of Athletic Involvement, Age, and Their Interaction

	Group Means (and SD's) for:				Univariate F-Ratios for the effects of:		
	Young Adults		High School Students		Athlete	Age	Interaction
Variable	Athletes	Non-Athletes[a]	Athletes	Non-Athletes			
Masculine Positive	49.0 (8.0)	42.4 (7.2)	46.1 (7.4)	42.1 (6.5)	19.5***	1.8	1.2
Masculine Negative	31.9 (9.6)	29.8 (8.0)	33.4 (9.3)	30.1 (6.1)	3.9*	0.4	0.2
Masculine Total	81.0 (13.9)	72.2 (13.3)	79.5 (14.6)	72.2 (9.15)	15.2***	0.24	0.1
Feminine Positive	53.3 (7.0)	52.6 (7.2)	55.1 (7.2)	52.7 (6.5)	1.8	0.7	0.5
Feminine Negative	35.1 (8.8)	37.1 (8.7)	35.8 (8.6)	39.3 (9.4)	3.4	0.9	0.3
Feminine Total	88.4 (11.1)	89.7 (12.4)	90.9 (12.5)	92.0 (12.0)	0.4	1.2	0.0

a -- the data for the young adult nonathlete group come from normative sample for the Australian Sex Role Scale instrument.

b -- the univariate F-ratios for the effects of athlete (athlete vs. non-athlete), age (young adult vs. high school students), and their interaction all have 1 and 148 degrees of freedom, though this value may vary slightly due to missing data.

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Table 2

Women's Multidimensional Self-concepts (multi-item scales) as a Function of Athletic Involvement, Age, and Their Interaction

	Group Means (and SD's) for:				Univariate F-Ratios (and standardized discriminant function coefficients) for:		
	Young Adults		High School Students		Athlete	Age	Interaction
	Athletes	Non-Athletes[a]	Athletes	Non-Athletes			
Physical Ability	68.8 (7.2)	51.8 (14.8)	67.8 (12.9)	43.9 (6.1)	148.3*** (1.07)	6.3* (.20)	3.7 (1.06)
Physical Appearance	56.0 (11.6)	52.4 (10.0)	45.6 (12.1)	42.5 (13.3)	2.9 (-.25)	25.9*** (.69)	0.0 (-.20)
Emotional Stability	81.0 (17.3)	72.2 (12.6)	79.5 (13.7)	72.2 (11.8)	1.3 (-.25)	0.1 (-.51)	(-.21) (-.28)
General Self	77.3 (14.2)	70.3 (13.5)	67.7 (13.3)	63.2 (15.7)	5.6* (.17)	12.4*** (.48)	0.3 (-.28)
Multivariate F-Ratio:[c] F(4, 145) =					39.7***	7.8***	1.3

[b]

* $p < .05$; ** $p < .01$; *** $p < .001$.

a -- the data for the young adult nonathlete group come from the Marsh and O'Niell (1984) study.

b -- the univariate F-ratios for the effects of athlete (athlete vs. non-athlete), age (young adult vs. high school students), and their interaction all have 1 and 148 degrees of freedom, though this value may vary slightly due to missing data.

c -- the MANOVA procedure from the commercially available SPSS procedure (Hull & Nie, 1981) was used to determine the multivariate effects of athletic involvement, age, and their interaction across the four self-concept scales and to determine the standardized discriminant function coefficients the represent the unique contribution of each area of self-concept to the effect.

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Table 3

Women's Multidimensional Self-concepts (single-item summary descriptions) as a Function of Athletic Involvement, Age, and Their Interaction

	Group Means (and SD's) for:				Univariate F-Ratios (and standardized discriminant function coefficients) for:[b]		
	Young Adults		High School Students		Athlete	Age	Interaction
	Athletes	Non-Athletes[a]	Athletes	Non-Athletes			
Physical Ability	7.00 (1.60)	5.09 (1.82)	6.96 (1.34)	4.04 (1.50)	99.9*** (1.02)	4.5* (-.14)	3.8 (-.56)
Physical Appearance	5.93 (1.31)	5.81 (1.27)	4.87 (1.63)	4.54 (1.59)	1.01 (-.23)	22.0*** (-.53)	0.2 (.09)
Opposite Sex	7.00 (1.34)	6.32 (1.57)	6.11 (1.90)	5.37 (1.81)	6.6* (.11)	10.4** (-.57)	0.1 (.06)
Same Sex Relations	6.23 (1.76)	6.41 (1.55)	6.96 (1.43)	6.33 (1.71)	1.4 (-.16)	1.4 (.47)	2.3 (-.64)
Parent Relations	6.37 (3.69)	6.11 (3.95)	6.93 (5.26)	6.85 (4.44)	0.9 (-.06)	3.5 (.39)	0.3 (.22)
Emotional Stability	6.47 (1.94)	6.03 (1.84)	7.02 (1.88)	6.26 (1.76)	4.4* (.06)	1.6 (.23)	0.2 (-.02)
Religious/ Spiritual	3.67 (2.78)	4.55 (2.66)	4.09 (2.43)	4.09 (2.47)	0.7 (-.14)	0.0 (-.08)	1.1 (-.25)
Honesty	7.77 (1.41)	6.86 (1.38)	7.07 (1.82)	6.78 (1.81)	3.8 (-.02)	2.0 (-.28)	1.3 (.53)
Verbal Skills	6.97 (1.22)	6.53 (1.33)	6.70 (1.96)	6.37 (1.60)	2.0 (.10)	0.6 (.03)	0.1 (.21)
Math Skills	5.70 (1.70)	5.08 (1.98)	6.43 (1.82)	5.50 (1.86)	7.3** (.26)	3.5 (.48)	0.3 (-.14)
General Academic	6.30 (1.60)	6.27 (1.49)	6.40 (1.56)	6.00 (1.56)	1.0 (-.21)	0.1 (-.30)	0.5 (-.30)
Problem Solving/ Creativity	6.50 (1.67)	5.92 (1.34)	6.27 (1.93)	5.80 (1.65)	3.4 (.01)	0.4 (-.05)	0.1 (.27)
Multivariate F-Ratio: F(12, 136) =					9.2***	4.5***	0.9

* $p < .05$; ** $p < .01$; *** $p < .001$.

a -- the data for this group come from Marsh and O'Niell (1984).

b -- the univariate F-ratios for each effects have 1 and 148 degrees of freedom, though this value may vary slightly due to missing data.

c -- the MMANOVA procedure from the commercially available SPSS procedure (Hull & Nie, 1981) was used to determine the multivariate effects of athletic involvement, age, and their interaction across the 12 self-concept items and to determine the standardized discriminant function coefficients that represent the unique contribution of each area of self-concept to the effect.

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Table 4

The Perceived Importance of Different Areas of Self-concept to Women as a Function of Their Athletic Involvement, Age, and Their Interaction

	Group Means (and SD's) for:				Univariate F-Ratios (and standardized discriminant function coefficients) for:[b]		
	Young Adults		High School Students		Athlete	Age	Interaction
	Athletes	Non-Athletes[a]	Athletes	Non-Athletes			
Physical Ability	7.37 (1.67)	5.44 (1.95)	7.53 (1.32)	5.46 (1.94)	51.1*** (.96)	0.1 (.05)	0.7 (.17)
Physical Appearance	6.43 (1.59)	6.79 (1.38)	6.15 (2.14)	6.28 (1.71)	0.9 (-.19)	2.2 (-.29)	0.1 (.08)
Opposite Sex	6.87 (1.93)	7.29 (1.46)	6.87 (1.88)	7.24 (1.23)	2.2 (-.24)	0.0 (-.45)	0.0 (-.32)
Same Sex Relations	6.17 (2.31)	7.12 (1.49)	7.24 (1.62)	7.15 (1.63)	1.2 (.10)	3.6 (.95)	3.2 (.88)
Parent Relations	7.10 (2.01)	7.54 (1.40)	7.70 (1.83)	7.78 (1.79)	0.6 (-.18)	2.0 (.33)	0.3 (.29)
Emotional Stability	7.63 (1.40)	7.25 (1.56)	7.41 (1.54)	7.91 (1.05)	0.5 (-.07)	0.9 (.14)	3.6 (-.45)
Religious/ Spiritual	3.77 (2.96)	5.12 (2.46)	4.48 (2.23)	4.78 (2.91)	2.8 (-.19)	0.2 (.05)	1.4 (.32)
Honesty	8.47 (0.78)	7.74 (1.42)	7.91 (1.58)	8.13 (1.24)	0.5 (.14)	0.1 (-.19)	4.6* (-.44)
Verbal Skills	7.73 (1.33)	7.06 (1.37)	7.24 (1.83)	7.48 (1.37)	0.2 (.10)	0.1 (-.20)	3.2 (-.40)
Math Skills	6.53 (1.70)	5.79 (1.69)	6.57 (1.80)	6.54 (2.05)	1.0 (.02)	1.6 (.84)	1.4 (.20)
General Academic	7.00 (1.60)	7.17 (1.25)	6.61 (1.84)	7.26 (1.69)	3.0 (-.44)	0.3 (-.36)	0.8 (-.16)
Problem Solving/ Creativity	7.20 (1.97)	6.67 (1.59)	6.65 (1.65)	6.85 (1.67)	0.1 (.13)	0.4 (-.55)	1.6 (-.19)
Multivariate F-Ratio: F(12, 134) =					6.0***	1.5	1.8

* $p < .05$; ** $p < .01$; *** $p < .001$.

a -- the data for this group come from Marsh and O'Neill (1984).

b -- the univariate F-ratios for each effects have 1 and 148 degrees of freedom, though this value may vary slightly due to missing data.

c -- the MANOVA procedure from the commercially available SPSS procedure (Hull & Nie, 1981) was used to determine the multivariate effects of athletic involvement, age, and their interaction across the 12 self-concept items and to determine the standardized discriminant function coefficients that represent the unique contribution of each area of self-concept to the effect.

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